

CLAIMS

1. A method for manufacturing a mask blank by depositing a film of a resist liquid on a substrate including a thin film functioning as a transfer pattern by a spin-coating process; covering the surface of the substrate with a covering member; and performing removal by dissolving of an unnecessary part of the resist film by supplying a solvent from above the covering member during the rotation of the substrate and the covering member together so that the solvent is supplied to the periphery of the substrate, wherein:

a reduced-pressure-drying process for the resist film deposited in the spin-coating process is performed before the unnecessary-film-removing process for removing the unnecessary part of the resist film by dissolving so that a deterioration in an in-plane-film thickness uniformity of the resist film caused by the unnecessary-film-removing process is suppressed.

2. The method for manufacturing the mask blank according to claim 1, wherein:

the spin-coating process is performed in a cup having an opening on an upside by dropping a resist liquid on the surface of the substrate, rotating the substrate at a predetermined rotating speed for a predetermined period of time in order to uniform the film thickness of the resist liquid, and rotating the substrate at a predetermined rotating speed for a predetermined period of time in order to preliminarily dry the film of the resist liquid.

3. The method for manufacturing the mask blank according to claim 2, wherein:

the rotating speed of the substrate for the preliminary drying of the film of the resist liquid is lower than that for uniformizing the film thickness of the resist liquid in the spin-coating process.

4. The method for manufacturing the mask blank according to claim 2 or 3, wherein:

an airstream from the upside of the cup toward the substrate is generated by exhausting at the downside of the cup in the spin-coating process.

5. The method for manufacturing the mask blank according to any one of claims 1 to 4, wherein:

the degree of vacuum in a substrate-receiving space is stepwise decreased in the reduced-pressure-drying process.

6. A method for manufacturing a mask blank, comprising:

depositing a resist liquid dropped on a substrate having a thin film by a spin-coating process;

forming a resist film by drying the deposited film of the resist liquid by a spin-drying process;

drying the resist film by a reduced-pressure-drying process;

supplying a solvent for dissolving the resist film to a periphery of the mask blank on which the resist film is formed; and

removing the resist film at the periphery by rotating the mask blank.

7. The method for manufacturing the mask blank according to any one of claims 1 to 6, wherein:

a difference between a maximum thickness of the resist film and a minimum thickness of the resist film at a region where a transfer pattern is formed is 50 angstroms or less after the removing of the resist film at the periphery.

8. The method for manufacturing the mask blank according to any one of claims 1 to 7, wherein:

the resist film at a region where a transfer pattern is formed comprises the periphery having a thickness not exceeding that of the central part of the mask blank after the removing of the resist film at the periphery.

9. The method for manufacturing the mask blank according to any one of claims 1 to 8, wherein:

the substrate is in a stationary state when the reduced-pressure-drying process is performed.

10. The method for manufacturing the mask blank according to any one of claims 6 to 9, wherein:

the rotating speed of the substrate in the spin-drying process is lower than that in the spin-coating process for depositing the film of the resist liquid.

11. The method for manufacturing the mask blank according to any one of claims 6 to 10, wherein:

the mask blank is heated for drying the resist film after the removing of the resist film at the periphery.